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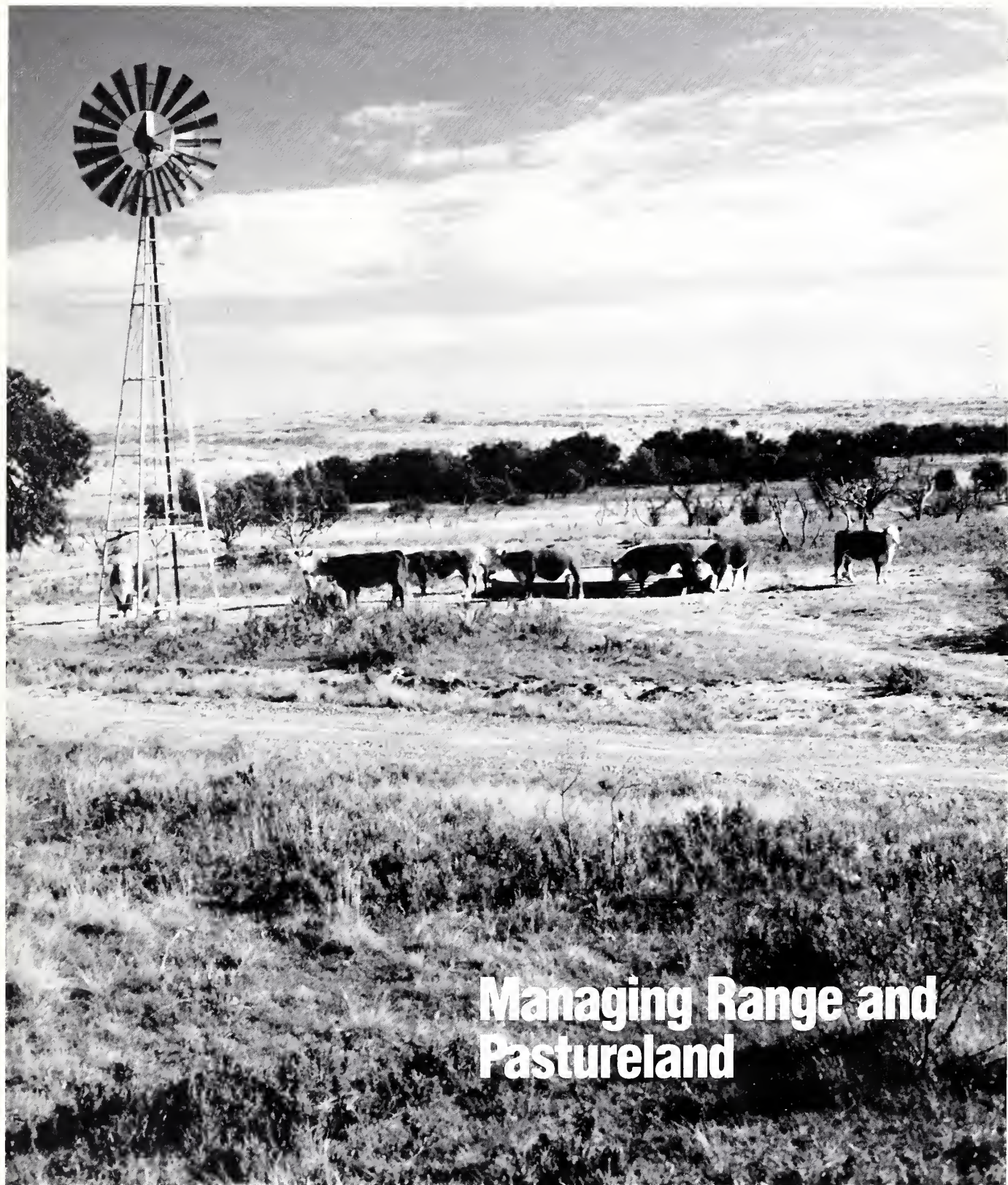
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Managing Range and Pastureland

Comments from the SCS Chief:

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Clayton Yeutter
Secretary of Agriculture

Wilson Scaling
Chief, Soil Conservation Service

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Leslie Jane Wilder
Editor

Paul DuMont
Associate Editor

Kathleen Diehl and
Kim Berry-Brown
Contributing Editors

Christopher Lozos
Design Consultant

Magazine inquiries
Send inquiries to: The Editor, *Soil and Water Conservation News*, Public Information Division, Soil Conservation Service, U.S. Department of Agriculture, P.O. Box 2890, Washington, DC 20013-2890.

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I WOULD LIKE to discuss my personal view of range and the way I see it fitting into a conservation program now and in the next 50 years. With all of the discussion I hear about sustainable agriculture, I see range as one of the true bright spots. Ranching is totally sustainable agriculture. Rangeland management is truly nature at its best — no plowing, no planting, no fertilization — just sound use of a renewable natural resource that's essential for domestic livestock and wildlife. Ranchers graze livestock such as cattle, sheep, and goats on their land. The livestock take off only what they eat; they replenish the land through manure, which puts life back into the soil. It's simple — just air, sunlight, and water, producing forage which is eaten by animals. They, in turn, produce meat, milk, and fiber.

The future of wildlife in much of this country is dependent on the quality of rangeland. Increasingly, lease hunting and fee hunting will become integral parts of range management. Therefore, there has to be a partnership between domestic livestock and wildlife. Farm ponds or other livestock water sources spread out controlled livestock grazing and also put more water in place for wildlife.

You've also got the aesthetic aspect of rangeland. To me there's nothing any prettier than native grass making a seedhead in the fall of the year, then seeing those seeds drop out to lie on the ground until they germinate. It's nature's way of reproduction. It proves the point that if you take care of your native grass, it will take care of you. Rangeland must not be overstocked or abused, because it can be damaged very quickly but recovers very slowly. Our information indicates that range conditions are, for the most part, improving. Ranchers, working with SCS and their conservation districts, are managing their lands in such a way as to achieve these results. I would predict that the trend will continue.

I also see range management becoming more technical as ranchers have access to computers and computer software that can help with necessary "number crunching."

In the Southwest, ranchland is plagued by brush, which is a water thief. Brush must continue to be controlled; it can never be eliminated. This will make better habitat for both wildlife and domestic livestock. Sound management is essential. The days are gone when a rancher can turn cattle out on the range and then ignore them. Livestock must be managed more than in the past.

The United States has more people with higher incomes than ever in the past. This puts more and more pressure on range, both to produce livestock and as habitat for wildlife. As this pressure continues to mount, private sector management is increasingly important. There isn't anything in the world that can replace a private owner's footsteps on his or her own land — the greatest incentive for sound resource management is private ownership. Most ranchers are working from their hearts.

There is a lot of interest in — and discussion about — riparian areas. They are very important, but let's not sensationalize them. Bottomlands along streams are just part of an ecosystem. There are ways of managing bottomlands in conjunction with uplands to derive maximum livestock and wildlife benefits without fencing streams.

There are predictions that the future of the beef industry is not very bright because of public concern over fat and cholesterol. I don't agree. Beef continues to be a popular and healthful food that is in high demand by American consumers. Beef today is lower in fat and calories than ever before because of new breeding and feeding techniques. It is also an excellent source of many nutrients — especially protein and certain minerals. The trend is rightly toward more lean and well-trimmed beef. Supermarkets are trimming more separable fat from beef. Many stores are advertising a quarter-inch trim for beef today. The demand for beef continues high, and I still see a bright future for ranching in the United States.

I would also predict today that sheep have a bright future on rangeland and Conservation Reserve land in this country if predators such as coyotes are controlled. Coyotes are an increasing menace to livestock industry and are beginning to prey more on baby calves than they ever have in the past. I feel this is due to an increase in the coyote population. Predator control is an important part of range management and common sense must be a part of our range management picture.

Again, private ownership of livestock, lease hunting, and fee hunting are critical to range management and will continue to be a big part of the range scene in future years.



RANGE

Ranging Back To History

TODAY, APPROXIMATELY half of all ranchers cooperate with the Soil Conservation Service in developing their range management systems. From its inception, SCS has been concerned with rangeland as well as cropland.

When SCS began operations in the 1930's, it was well recognized that the effects of erosion on rangeland presented as much of a problem as the erosion on cropland. The U.S. Department of Agriculture's Forest Service had begun imposing grazing fees to try to reduce overgrazing on the rangeland under its control. Researchers in USDA, many of them in the Forest Service, had begun to examine the relationship of grass cover to flash floods and to explore the best methods of trying to establish grasses on rangelands. Erosion from rangeland was recognized as a threat to large Government-financed

reservoirs for flood control and irrigation water.

By the 1930's, USDA plant explorers were being sent to discover "drought resistant" plants for the semiarid West. Concerns over the condition of rangeland led to a USDA survey in the 1930's, "The Western Range."

The USDA bulletin "Soil Erosion: A National Menace" furthered Hugh Hammond Bennett's crusade to awaken agriculturalists to the dangers of soil erosion. His coauthor, William Ridgely Chapline, who was in charge of grazing research for the Forest Service, wrote the section on the western grazing lands.

The assignment of the young SCS range specialists was to work with ranchers to develop grazing systems that would conserve and improve the condition of rangeland. Ranchers could certainly observe changes in their range and in the mixture of plants and their vigor after heavy grazing. But the exact relationship of range to the number of cattle and the timing and the intensity of use of the range remained complex. The highly variable

nature of rainfall complicated the matter. Impacts of poor or wise usage of the range on beef production would not immediately be obvious. The task of the young conservationist was to persuade ranchers that range management benefited not only the land, but also, given time and patience, the rancher.

The range specialists in SCS needed a system to promote range management that was understandable to the SCS field technicians and ranchers alike. Ranchers needed a system that would give them some indication as to when and how much the range might be grazed without causing deterioration and would allow rangeland in poor condition to improve.

Early 20th-century range specialists came to realize that intense grazing caused a change in the composition of range plants. Some plants increased, others decreased in the mixture; new plants, or invaders, appeared.

About the same time, ecologists such as Frederic Clements at the University of Nebraska were studying prairie plant communities. Clements theo-

An SCS range examiner in 1937 inspects grass-covered Coast range of California to determine the effect of vegetation in controlling erosion. (Photo by W.B. Bradford.)



Owners needed a clearer, quicker way to figure out the cost ratio of animal-to-range that would improve their ability to manage range and grazing land resources.

rized that grasslands were a community in various stages of plant succession progressing toward a climax. By applying this concept to rangeland, SCS developed range condition classes — poor, fair, good, or excellent. E. J. Dysterhusis, an SCS range scientist, applied the principles of quantitative ecology (inventorying the plant community) to the system. The variance of the existing plant community from the potential climax community determined the range condition for that site. Relic sites provided an approximation of the climax community.

Armed with this information, the range specialist could then determine the range condition for the ranchers and advise them on grazing practices that would help maintain or improve range conditions.

The range site and condition system has served SCS and the range well for several reasons. First, this system is easily understood. Second, by trying to approximate or maintain natural range conditions, it produces a plant community that is valued for many uses, such as wildlife habitat, water retention and infiltration, and erosion control.

Various specialized grazing systems have been proposed and used. However, the range site and condition classification has remained the foundation of SCS's range management assistance. Indeed, surveys between the 1930's and the present have indicated a general improvement in rangeland.

Douglas Helms, historian, SCS, Washington, D.C. and **Harlan De Garmo**, national range conservationist, SCS, Washington, D.C.

Grazing Land Software Developed

HOME, HOME ON the range" used to mean a cowboy riding a lonely expanse of grassland. But the ranching scene is slowly shifting away from the romantic view as ranchers and owners are demanding more rapid and efficient ways to make management decisions. And, computers are providing the answers.

Computers are entering the lives of many farm and ranch operators, aiding in such areas as current marketing information, crop reports, and automated farm/ranch management and budgeting. Now, a new software package, Grazing Land Applications (GLA), is available to the Soil Conservation Service to aid in the improved management of all pasture and rangeland across the U.S.

Ranching has never been easy. Owners have always had a lot to think about: livestock investment and profits, weather conditions, natural disasters such as a range fire, and short- and long-term range management plans. Most of this information was kept in an owner's head. However, because of cattle pricing fluctuations, owners needed a clearer, quicker way to figure out the cost ratio of animal-to-range that would improve their ability to manage range and grazing land resources.

A cooperative research and development effort by the Soil Conservation

Service, the Texas Agricultural Experiment Station, and the Texas A&M University System produced the GLA software. The goal of this group was to design a functional planning tool that would help record, organize, analyze, and transfer the vast amount of information that is needed to determine the best practices than can be used on any given grazing operation. Range and farm managers and owners will now find it easier to make critical planning decisions about a grazing enterprise because GLA gives them a way to organize all the facts they need as quickly as possible.

According to David Riegel, senior systems analyst at Texas A&M, GLA is a unique program for two reasons:

- It lets the user create a forage and animal inventory that collects information about animal types, harvest efficiency, plant names, and quarterly forage values. "It is flexible enough," said Riegel, "that an owner could inventory as little as 1 acre or as much as 100,000 acres or more."
- It combines ecological changes with economic factors. It joins information about climate and rainfall with costs and income so that a rancher can project how economically feasible a range improvement practice would be over a planning period of up to 20 years.

"This computerized planning system lets ranch managers or owners play 'what if' games using different scenarios," said Jerry Stuth, Range Science Department professor at Texas A&M and coordinator of the GLA project. "They can sit back and input information about their own unique ranch situations and let that data interact with built-in data bases. What they end up

"With the right combination of brush control and grazing management . . . some areas of my operation that formerly sustained only 800 pounds per acre of grass now produce 7,000 pounds per acre."

Florida Field-Tests GLA

Ranchers in Florida are helping to test the adaptability of the new Grazing Land Applications (GLA) software to the Southeast. Gene Felton, owner of Alico Ranches, is helping to develop response curves for range improvement practices.

"With the right combination of brush control and grazing management system," Felton said, "some areas of my operation that formerly sustained only 800 pounds per acre of grass now produce 7,000 pounds per acre."

Felton found that when GLA combines all the individual practice response curves that are planned for a site, a forage balance sheet is generated. Economic data can be entered that allow ranchers to compare the financial expectations of implementing different practices.

"The outcome of these practices in a low-input ranching system is the essence of what we need to know," Felton continued.

Observations by the Florida ranchers involved in this test phase will contribute to the usefulness of the GLA tool.

Sid Brantly, range conservationist, SCS, Gainesville, Fla.

with are estimates about the long-term and short-term effects of alternative technologies on land resources and finances. Inputs can range from the minimum — "What's the least that I can do to get more production?" — to the maximum — "How much more should I do to get the most production?"

The program is also "region-neutral." SCS is scheduled to use the software in its more than 3,000 field offices nationwide, including Alaska and Hawaii. Currently, it is being field-tested in eight States. Field office personnel will work with ranchers to plan out basic forage resources. Soil and range conservationists will be able to sit down with owners of grazing land and help them look at their animal resources to determine if the demand of the animal matches the supply of forage.

While human judgment is still essential, the GLA software will help bring ranchers closer to making sound decisions about livestock nutrition and reproduction, grazing, brush management, wildlife and exotic game management, and much more in the shortest amount of time.

Bonnie Lyons, technical writer, Ranching Systems Group, Texas A&M University, College Station, Tex.



The modern-day rancher works his computer right on the hood of his pickup. Sid Brantly, SCS range conservationist in Gainesville (on left), helps Florida ranchers Mike Milicevik (center) and Harvey Sapp test range and pasture planning using the GLA computer software. Field transects, forage balance sheets, and economic reports are computed, printed, and delivered to the ranchers on site.

"The last burn was the best one. For the first time, the entire 172 acres burned and we now have the cedar and prickly-pear cactus under control."

Burning Benefits Texas Rangeland

PRESCRIBED OR CONTROLLED burning can dramatically improve rangeland — but it is a trick to do it correctly, keeping the fire under control. At Doss, Tex., the all-volunteer fire department helps local livestock producers — free of charge — to apply prescribed burning practices to their land.

Warren Hahn was the first producer to try the practice in this community, which is located in the Hill Country northwest of Fredericksburg. "I heard a Soil Conservation Service range conservationist make a talk about controlled burning in 1982," he said. "I was impressed and decided to try it on a 172-acre pasture." Hahn, who had a Great Plains Conservation Program contract on the land, had several neighbors who were members of the Doss Fire Department. They offered to help with the burning of the pasture, which was infested with thick, Ashe juniper (cedar).

SCS gives technical assistance to landowners and operators through the local Gillespie County Soil and Water Conservation District. District Conservationist Jonny Ohlenburg of Fredericksburg helped Hahn develop his first burning plan. The detailed burning plan specified direction to burn, humidity range, wind velocity, air temperature, time of year, soil moisture conditions, and other details.



Henry Welge, a volunteer fireman from Doss, Tex., serves as fire boss while other members of the fire department light backfires with drip torches. Welge communicates with other firemen with a two-way radio.

One day in February 1983, all the conditions listed in the burning plan occurred. Hahn had helped the fire department preburn a firebreak. That day they set the fire and watched, along with several other curious producers who were on hand, as the 9-mile-an-hour northwest wind carried the fire across the pasture toward the firebreak.

"It went like clockwork," Hahn said. "The only problem we had was the green cedar didn't burn well. It was so thick that you have to whittle away at it."

Since that initial burn in 1983, Hahn has used a chain saw to take down the cedar and he has initiated two more controlled burns, in 1985 and 1989, to completely clear the pasture.

"The last burn was the best one," he said. "For the first time, the entire 172 acres burned and we now have the cedar and prickly-pear cactus under control."

Hahn's pasture has had other advantages: available forage has tripled, there has been a large increase in desirable forbs, and edible woody plants

are more accessible to livestock.

Using a planned grazing system, Hahn runs cattle and Angora goats together in one herd. The goats help control oak sprouts. The livestock are rotated through six pastures. While one pasture is being grazed, the other five are rested.

Ohlenburg is pleased with Hahn's pasture. Since he drew up that first plan for Hahn, he has helped develop burning plans for seven other producers in the Doss community to burn about 2,200 acres of rangeland.

With each burn, from 8 to 20 neighbors help each other with equipment and labor. The fire department is always on hand to help with the burning, and in case of an emergency.

Producers in Texas burn an average of about 165,000 acres per year on rangeland and pastureland. A similar amount of privately owned land is burned each year by the Texas Forest Service for woodland improvement.

Dale Allen, recently retired public affairs specialist, SCS, Temple, Tex.

Ranchers have expressed interest in . . . the effects of their grazing practices. . . . Analysis aids them in measuring the success of grazing management objectives. . . .

Range Trends Monitored In Arizona

FOR THE PAST 10 years the Soil Conservation Service in Arizona has been monitoring range trends under various grazing systems in Pima and Pinal Counties. Analysis of the monitoring program has greatly enhanced the range program there, strengthening technical guides and sharpening the skills of range conservationists.

Range conservationists have been using frequency measurements along permanent transects and photo plots to look at the response of plant communities to grazing management (see

photographs). Significant changes in individual plant species are noted in this way. They have also recorded range condition ratings, seasons of use, numbers of animals, rainfall, utilization, and production along the transect line. Photographs have been taken both at the end of the grazing season for the pasture and in the early fall after the forage crop has been produced. Monitoring has shown where manipulative practices such as burning, seeding, and brush management are needed if change is to occur.

Ninety-seven transects have been installed on 26 ranches encompassing 742,000 acres of State, private, and Native American rangeland. All of these ranches are using either rest or deferred-rotation grazing to improve range conditions.

Range conservationists, with the help of a rancher, can read between two and three transects in a day. Usu-

ally, they are read each year for 3 years to establish a trend, and then the interval can go to every 2 or 3 years.

Ranchers have expressed interest in looking closely at the effects of their grazing practices on the range they manage. Analysis aids them in measuring the success of grazing management objectives, and in improving and documenting the changes in plant communities. Ranchers, because of the program, have been able to convince other, neighboring ranchers to work with SCS on grazing management, and three ranchers have been able to successfully petition and receive permanent increases in carrying capacity from the Arizona State Land Department.

Dan Robinett, area range conservationist, SCS, Tucson, Ariz.



Significant changes in individual plant species have taken place at this site over a 3-year period. In the photo on the left, taken in 1981, plant communities are sparse. By 1983 (photo on right) the response to grazing management is clearly visible.

The primary nontraditional use of private rangeland is recreation . . . hunting, dude and working ranches, horseback riding, hiking. . . .

Ranchers Explore Options

RANGELAND HAS BEEN, traditionally, a place where animals grazed. However, many ranchers these days have been looking at options to supplement their incomes. Some have gone off the ranch to find additional work, or spouses have worked on or off the ranch. Ranchers have looked at improving the cattle business, improving their land, and reducing the cost of their operations in an effort to increase their net income. Still others are exploring ways to use rangeland for other than grazing.

The Soil Conservation Service is working with ranchers to help them make the most environmentally sound use of their resources. By diversifying, they put less pressure on their forage resources. They can make up any income lost from ranching through other sources.

Larry Butler, an SCS range conservationist from Texas, who is currently on the West National Technical Center Staff, is writing his Ph.D. dissertation at Utah State University on "Fee Hunting and Recreation on Private Rangeland in Texas and Oregon." Butler has been conducting surveys in Texas and Oregon as part of his research. Although the collection and analysis of the data are incomplete, he has already made

several observations about nontraditional use of rangeland.

The primary nontraditional use of private rangeland is recreation including hunting, dude and working ranches, horseback riding, hiking and backpacking. Some less common recreational activities include camping, fishing, rock climbing, stargazing, bird-watching, hang gliding, flying radio-controlled airplanes, cave exploring, trap and skeet shooting, four-wheel driving, all-terrain driving, and motorcycle riding.

Hunting presents the biggest opportunity for supplemental income. In most States, landowners cannot sell wildlife, because it is legally owned by the people of the State. But they can sell the right to be on their ranches.

Some ranchers charge a small fee for hunting, while others have written contracts listing "ranch rules" for the landowner and the hunter. The ultimate hunting experience may be a package deal, complete with a guide, elaborate lodging, and food for a set fee, according to Butler. Prices for these leases may range from \$25 per hunter per day to as much as \$5,000 for a ranch that manages trophy animals.

The duration of the hunting lease varies. Some ranchers lease the entire ranch to an individual or group for the entire year. Others lease for only the specified legal hunting season. Day hunting is the shortest duration. Ranchers may lease to one group for archery deer hunting and another group for the spring turkey hunt.

Today, there is a great diversity of types of hunting leases: bobwhite quail, mourning dove, waterfowl, elk,

antelope, and exotic animals such as red deer, axis deer, fallow deer, sika deer, mouflon sheep, and Barbados sheep.

Buddy Clark of Menard County, Tex., manages habitat and species improvement for both white-tailed deer and wild turkey on his 13,000-acre ranch. As part of the species improvement, he takes a yearly census of the deer by helicopter. The last census count put his population at one deer to each 7½ acres.

Clark, who is a local district director and State district director for the Texas Soil and Water Conservation District, said, "For the past 7 years, I have been developing cover, developing habitat for the wildlife. I feel we know more now about wildlife habitat development than we ever knew before."

Working ranches and dude ranches are becoming popular vacations with people who live in urban and suburban areas. Many ranchers take this as an opportunity to diversify.

One rancher in Montana operates a working ranch and collects \$485 per week per person from guests. The moment they arrive, he puts them to work. He also operates trail drives to move his cattle to and from summer and winter range. He takes 10 guests for each trail drive and drives his cattle for a full week. An authentic chuck wagon is used on the trail.

Dude ranches offer some work, but are mostly set up to offer horseback riding, hiking, and other activities such as photography, rock hunting, and bird watching.

“... every ranch probably has something that can be utilized in a manner not previously considered that could increase the cash-flow of the ranch.”

Bob Larson of Medicine Lodge, Kans., has the “Gyp” Hills Trail Rides which he mostly markets to people with riding horses. He and a neighboring rancher developed this enterprise 17 years ago to offer people living in urban and suburban areas a chance to discover the beauty of open country.

“We have two weekends in May when about 50 people show up in every conceivable camper, dragging their horses,” he said. “They saddle up, and about 11 a.m. on Saturday, we start out and ride for about 8 miles. When we get back, we have a huge barbecue, and a square dance, or bring in a bluegrass band or something like that. Then the next day, we go off in another direction. We have mostly repeat people, from about a seven-State area.

“Throughout the rest of the year, we have smaller groups who want to hike, backpack, ride horses, and camp. We have six stocked ponds for those who want to camp and fish.” Larson was named the Agricultural Innovator of the Year in 1988 by the Kansas State Department of Agriculture for his recreation and tourism work.

“When you think of your options in the recreational area,” said Butler, “you can’t think only of what you can offer and how much money you can make. There’s more to consider. First is the convenience of it. Ranchers, for the most part, are excellent managers of livestock. But managing people is a lot different. The contrarious calf is nothing compared to one slightly dissatisfied person who has paid to have a

good time and not had his or her expectations met.”

Butler said another consideration is that ranchers may need to teach visitors to respect the land. “For example, if a rancher opens his land to motorcycle trails, he may have to spend a great deal of time in patrolling the trails and teaching people about land use in an effort to keep the erosion to a minimum.”

The most important consideration for ranchers contemplating the recreational use of their land, according to Butler, is the return on the investment. “When the total cost is figured up, the ranchers have to include things like extra facilities such as bathrooms and sleeping and eating quarters. They will have higher water use for these facilities. They will also need extra animals — mules, horses — and food and water for them. If they are going to deal with exotic species of animals for any reason, they have to consider the cost of fencing them on their property. When they take all the costs into consideration, ranchers have to be more concerned about net revenue than gross income.”

“I charge \$45 dollars for adults and \$30 for kids who come for the organized trail rides in May,” said Larson. “For those who come the rest of the year, I charge between \$7.50 and \$10, depending on what they will be doing. In all, I figure I gross about \$25,000 and net about \$10,000. It’s not a whole lot of money, but it’s enough. And, we have fun earning it.”

Clark figures most ranchers in Texas who have alternative earning enterprises on their ranches will earn 25-75

percent of the total net income for the ranch in recreational use. “For many people it is the difference between being able to stay and not stay,” he said.

“The point is,” Butler said, “every ranch probably has something that can be utilized in a manner not previously considered that could increase the cash-flow of the ranch. Let me give you an example. In Texas, one rancher was going to kill every pronghorn antelope on his ranch so there would be more forage for his cattle. His neighbor was selling the right to hunt antelope for as much as \$1,250 per hunter. When SCS helped this rancher cost out developing habitat for the antelope, he came out with a profit of over \$3,500. He wasn’t about to get that kind of profit just adding a few more head of cattle to his operation.”

Butler stresses this point: “There is an economic incentive for encouraging wildlife habitat and population management at the same time you are ranching in a traditional fashion. They can work together with good planning.

“What most ranchers need to do is look for the optimal solution to diversify their operations. If wildlife photographic safaris are possible and appealing, then there is no reason the rancher can’t figure out what that will cost, make the changes to his operation to accommodate the public, and market the idea. People will pay. The possibilities are endless. . . .”

Kathleen Diehl, contributing editor, *Soil and Water Conservation News*, SCS, Washington, D.C.

"Use of annual grass alone may not do the job on many range sites," said King. "Perennials and annuals together may be the answer."

Perennial Vs. Annual Grass Cover

"IN OUR COLLABORATIVE study, we want to compare and contrast soil conditions under perennial grass cover versus annual grass cover," said Richard King, SCS range conservationist in California.

"We hope that the results will provide us the first meaningful data in California on the potential of perennial vegetation to improve the soil environment, compared with annual vegetation," said King. "Implications for changing current management recommendations are enormous!"

The Tehama County Resource Conservation District, Soil Conservation Service, Cooperative Extension Service, University of California at Davis's (UCD) Department of Agronomy and Range, and University of California's

Hopland Field Station are cooperating in this study.

Current management recommendations for California annual rangelands and dry croplands in this Mediterranean-like environment focus on maintaining a protective layer of residues from annual species on the soil surface. Adequate residues (minimum of 700 to 1,000 lb/acre) are considered effective in protecting soil and sustaining productivity.

Despite maintaining adequate residues, many long-term ranch families feel that productivity is declining. Gully and streambank erosion remain a major conservation problem in Tehama and Glenn Counties.

In each horizon of the study sites in these counties, lab samples were collected, and complete soil descriptions made. They were sent to the SCS National Soils Laboratory in Lincoln, Nebr.

Additional soil samples were simultaneously taken by UCD to determine root distribution, densities, and diameters. Infiltrometer data were also collected, along with standing-crop biomass clippings, for productivity data and nutrient analysis.

Field observations of introduced and remnant native species suggest perennial grass cover, as compared with annual cover, could potentially: (1) offer greater erosion control in areas of severe runoff, (2) add more organic matter to the soil, (3) improve soil porosity, and (4) improve site productivity.

Results will be applicable to SCS Field Office Technical Guide recommendations dealing with annual rangeland, annual pastureland, and intermittent dry cropland. This includes standards, specifications, and recommendations used in Food Security Act planning, water quality issues, and emerging efforts in low-input sustainable agriculture.

"Use of annual grass alone may not do the job on many range sites," said King. "Perennials and annuals together may be the answer."

Rebecca de la Torre, public affairs specialist, SCS, Davis, Calif.



John Menke, agronomy and range science professor at the University of California at Davis, takes forage clippings for chemical analysis. (Photo by Lisa A. Hokholt.)

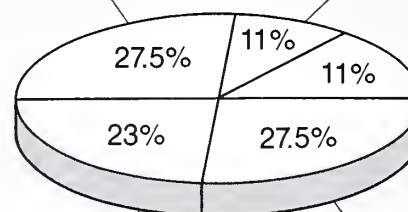
Slicing Up The Grazing Pie In California

California Range Facts

- 85 million acres of grazing land (including forests)
- produce 64 million acre-feet of annual water runoff
- include 41 million acres grazed by 2 million head of range livestock
- are used by millions of people for recreation
- support 650+ species of wildlife

Desert rangeland—variable area use; low average productivity (includes Alpine barren and rock)

Grass rangeland—annual grasses and forbs; most important for range livestock use



Shrub rangeland—perennial grasses and forbs among sagebrush and other shrubs

Conifer forests—summer forage; provides green feed when it is scarce elsewhere

The Voisin system . . . has produced substantial savings in labor and purchased feed . . . increased milk production . . . yielded healthier animals.

Voicing It For Voisin

“THIS IS EXCITING! Sure, some people would say that farming is boring. But hey, this is fun! And I owe it all to Voisin grazing.”

These are not the impetuous remarks of a starry-eyed suburbanite trying his hand at “a day on the farm,” but of a city boy from Boston who just wanted to be “the best possible herdsman.”

Richard Atkinson of East Montpelier, Vt., just completed his 11th year in farming, and the 38-cow Jersey herd he has now ranks seventh nationally in milk pounds, tenth in butter fat, and fifth in protein. He attributes his success to what he describes as the “Brave New World” of dairy farming — the Voisin Grazing Management system. Andre Voisin developed this system in the 1950’s.

After completing degrees from William and Mary College and the University of New Hampshire, Atkinson started as a herdsman in 1978. He rented a 50-acre farm in 1983 and bought it in 1988. Even though he experienced hard times, he has had no re-

grets. “It was a scramble . . . no room for error,” he explained. “Still isn’t.”

Room for error narrows dramatically when capital is at a premium. Fortunately, Voisin Grazing Management is not capital intensive.

“This is great for people with very little money,” Atkinson enthused. “It’s a good way to get started. It’s management intensive, all right, but it’s your management! You have to use your brains and keep an open mind. You have to use all your resources. Pastures are a great resource!”

While there are startup costs, Atkinson sees many more advantages to Voisin. Initially, he had to purchase an energizer and temporary fencing. But the need for expensive machinery was minimal. Atkinson relies only on a small tractor, a spreader, and a mower. “I don’t need any more,” he added.

Atkinson went on to compare small, conventional operations with large ones, noting that the equipment needs are the same.

“Small farms have real troubles competing. You need the same equipment as large farms, but all you can afford is junk gear, so you end up spending half your time fixing it. You’re too busy tinkering with equipment,” he said. “If you want to do a good job, you’ve got to take care of your cows.”

“My ability and expertise lie in working with cows. I’m not a mechanic. I don’t want to be a mechanic!” Atkinson postured. “This is a marriage of convenience.”

“The Voisin system works well when pastures are eaten right down,” Atkinson explained. “They need to be grazed down so well that regrowth remains lush and doesn’t get choked out by older plants.” It’s a dynamic system that changes over time to take advantage of increased productivity. You produce high quality stuff all the time, not just in the spring.”

He feeds his cows for 6 months, mostly by pasture. He rotates them to a new 1 ¼-acre pasture each day. His total pastures average 115 tons of feed at about one-third the cost of stored feed. No labor is involved. All he feeds in the barn is a little grain and a couple pounds of hay.

The Voisin Grazing Management system on Atkinson’s farm has produced substantial savings in labor and purchased feed, has increased milk production without compromise in quality, and has yielded healthier animals.

A recent economic study of Atkinson’s operation showed that over the past 4 years he received \$3.60 in savings and benefits for each dollar he spent on Voisin Grazing Management.

“With farming, you can’t afford to have mediocre results,” Atkinson summed up. “If I had mediocre results, I’d be out of farming!”

Ann Dudas, public affairs specialist, and **Brian Pillsbury**, agronomist, SCS, Winooski, Vt.

... it offers good prospects of increasing grass seed germination threefold.

Disk Chain Improves Rangelands

ROB BROWN, LIFELONG rancher and respected conservationist, expects to retain more rain water more evenly spread across every acre than ever before.

Thanks to the land-diking technology of Bruce Smallacombe, an Australian inventor, Brown's West Central Texas dryland wheat has shown good results. Brown pulls his chain-diking unit behind a chisel plow or disks to get his dryland wheat ready for planting. More than 18,000 pockmarks 4 to 5 inches deep, almost 1 foot long, and about 10 inches wide, are left behind on every acre. Brown hopes that, through these efforts, he can retain 30 percent more rainfall for his unfurrowed crops. The chain diker was designed to conserve moisture and reduce runoff.

Similar technology is promising good results as part of a larger tillage system, which will prepare root-plowed rangeland for grass seeding, says Harold Wiedemann, a researcher and professor at the Texas Agricultural Experiment Station in Vernon, Tex. Wiedemann said he has helped develop an easier way to use a disk-chain concept. He put the disk-chains in a triangular formation behind a tractor to break rough ground, despite any debris.

Tests show chain diking can boost wheat grain production by 11 percent. However, combining the chain diker with the disk-chain on rangeland can boost seeded grass density threefold, compared to disk-chaining alone, according to Wiedemann.

"We're convinced it's doing a good job," said Dick Yeager, farm and ranch manager for the 500,000-acre Waggoner Estate in Texas.

Yeager said he likes the formation of the disk-chain, stabilizer bar, and chain diker because of its good results on wheat land, pasture, and rangeland.

For Yeager it offers good prospects of increasing grass seed germination threefold.

Considerable work lies ahead in developing specific blade and chain sizes that will be compatible with various types of soils and vegetation. Weiderman feels that the potential of the system in reclaiming poor land is worth the effort of doing additional research.

Worth Wren, Jr., Earth Team volunteer, Fort Worth, Tex.

The disk chain consists of a ship's anchor chain with steel paddles welded to links and was designed to conserve moisture. (Photo by Worth Wren Jr.)



This method increases the expected life of the seedling by 10 or more years. Erosion has decreased to about zero tons per acre . . . forage has increased. . . .

Reclaiming Grasslands

“THERE ARE MILLIONS of acres eroding in Utah due to lack of ground cover. Much of it is the result of

dense pinyon-juniper stands,” said Deane Harrison, State resource conservationist, SCS, Salt Lake City, Utah.

The plentiful pinyon and Utah juniper forests have invaded high-producing grass rangelands in the western States. A lack of wildfires and heavy livestock grazing has enabled this invasion. The results have been high erosion rates and low forage production for livestock and wildlife.

Thick stands of pinyon and Utah juniper on deep, loamy soils usually prevent the growth of foliage plants that form understory. Also, needle duff, shade, and water-robbing effects of these trees make it impossible to seed and establish understory in an existing stand.

Reclaiming grasslands from the pinyon-juniper forests has been an ongoing process for nearly 40 years. Historically, the most common method used to convert pinyon-juniper forests to grasslands has been chaining: stretching a heavy ship's anchor chain between two large crawler tractors. The chain is pulled in one direction to rip through trees. Grass, forb, and shrub seeds are applied aerially. The chain is then pulled back in the other direction to complete the tree removal and also cover the seeds.

Originally, the anchor chains weighed 90 to 110 pounds per link. However, the heavy chains have been replaced by 40- to 60-pound link chains. Small trees or “whips” bend under the lighter chain and are not destroyed, resulting in a forest of small trees in several years.

In order to compensate for the lighter chains, Utah conservationists

recommended the following formula:

- perform first chaining in the spring
- leave trees down until late summer
- perform a prescribed burn in early fall
- apply seeds in late fall
- backchain the area.

As a rule, approximately 50 percent of the trees are destroyed during the first chaining. The fire and heat destroy the whips and other remaining live trees, which makes a clean seedbed. The blackened surface speeds up seed germination in the spring and releases nitrogen to aid in seedling establishment.

This method increases the expected life of the seedling by 10 or more years. Erosion has decreased to about zero tons per acre, and forage has increased up to 10 times its previous state. The ease of burning is dependent on the density of the stand. Burning costs vary from \$2 to \$4 per acre. One problem with burning is not having enough trees left after the burn to push into eroding drainages to curtail gully erosion.

Preventing pinyon-juniper whip regrowth on chained seedlings is easier and cheaper than other followup treatments. Alternatives such as hand-cutting, chemical treatment, waiting for whips to mature, and rechaining are expensive and of questionable feasibility.

“There is no end to the benefits to water quality, livestock forage, wildlife, and decreased sedimentation from this type of practice,” said Harrison.

Tom Simper, range conservationist, SCS, Cedar City, Utah

Hundreds Compete in Land Contest

Over 900 contestants from 33 States competed in the 38th Annual National Land, Pasture, and Range Judging Contest near Oklahoma City, Okla., May 2-4, 1989.

The participants tested their individual and team skills in three events that included land judging, homesite evaluation, and pasture and range judging. Each event had three divisions: one for members of Future Farmers of America (FFA), another for 4-H Club members, and a third for adults. Contestants evaluated land characteristics of topsoil, subsoil, and slope. They also recom-

mended treatment to improve the land's adaptability for specific uses.

The Sweetwater, Tex., FFA Chapter and the Shelby County, Ind., 4-H Club were presented the national champion trophies in the land judging category. The Meade County, S. Dak., 4-H Club and the Thrall, Tex., FFA Chapter received top honors in the pasture and range category. The Cherokee, Tenn., FFA Chapter and the 4-H Club from Marion County, Fla., won recognition as national champions in the homesite evaluation category.

The Oklahoma Association of Conservation Districts is the primary sponsor of the contest, and many agencies and organizations helped with the 2-day event, including U.S. Department of Agriculture's Extension Service, Farmers Home Administration, and Soil Conservation Service; U.S. Department of Interior's Bureau of Indian Affairs; Oklahoma State University; and the Oklahoma Conservation Commission.

Dwain Phillips, public affairs specialist, SCS, Stillwater, Okla.

Ranchers Voice Ideas to SCS

Last spring, 15 of the top ranchers and range management professionals throughout Montana told the Soil Conservation Service how they think SCS should look at the rangeland industry.

The participants in the 2-day May Rancher's Forum in Great Falls, Mont., identified the good things SCS carries out in Montana to provide quality technical assistance to ranchers who make decisions on 39 million acres of private rangeland. They also developed several recommendations for SCS' consideration in its efforts to provide better

technical assistance to the ranching community.

SCS' help in strengthening the role of the Governor's Rangeland Resource Executive Committee was high on the list. The goal is to make it the focal point for statewide range issues and education.

The group believed that Coordinated Resources Management and Planning (CRMP) could be expanded to include weed control, wildlife grazing on multiple ownerships, recreation access, and watershed management.

The participants had several suggestions on conservation planning. A priority was for SCS to provide practical ranch training to its employees who had no ranching backgrounds. Other suggestions included range monitoring in conservation plans and providing followup help on a regular basis to ranchers learning how to use grazing systems.

The forum encouraged SCS to include weed management as a part of conservation plans for ranching to combat noxious weeds. The group also agreed that stream corridors should be managed with adjacent uplands and not as a separate unit.

The participants considered education and public awareness to be vital in getting the message out to other ranchers, youth, and the public. They solicited SCS' help in their effort and requested that SCS be a strong advocate of private sector agriculture.

Montana SCS has already begun incorporating the results of the forum into its range program. Noxious weed control is now part of the conservation planning process. SCS is also partially funding a range position with the State Department of Natural Resources to help provide leadership to the Governor's Rangeland Resource Executive Committee.



This FFA student is participating in the plant identification part of the Pasture and Range Judging Contest. (Photo by Dwain Phillips.)

An example of the expanded CRMP effort is the coordination of public access to Federal land, wildlife grazing on private land, and stream corridor management being led by the Ruby Valley Conservation District.

"Keep your eyes on the SCS range program in Montana," said Pete Jackson, Society for Range Management executive vice-president. "It's on its way to greater things."

Richard Gooby, State conservationist, SCS, Bozeman, Mont.

Colorado Teachers Study Range

Approximately 70 teachers from Colorado attended the Eighth Annual Conservation Teachers' Workshop at Western College in Gunnison, Colo., July

10-12, 1989. This year's theme was "Rangeland — Its Many Uses."

In addition to a different natural resource subject each year, the workshop features programs by Colorado's conservation teachers-of-the-year from the National Association of Conservation Districts-Deutz Allis awards program. This year's program included an all day field trip to two ranches to give educators outdoor learning experiences in range, wildlife, and riparian or streamside management.

Bryce Hermanson, a fourth grade teacher from Last Chance, Colo., said, "I will rewrite my science curriculum based on the materials we received this week. I learned a lot about the rangelands, riparian environments, and short and long grasses that I can build into our school's team teaching program."

John Scott, district conservationist in Gunnison County, Colo., explained how the Soil Conservation Service uses the range clipping ring to measure one-

thousandth of an acre to determine air-dry weight and percentages of various plants on a range site. This in turn helps SCS and the rancher to figure the carrying capacity of the range.

Rancher Ted Bemis told teachers he had doubled the capacity of his rangeland over the last 5 to 6 years by following SCS guidelines on avoiding overgrazing. He practices this by spraying and burning sagebrush, proper grazing management, and rotation of pastures on a timely basis.

Colorado's teachers were sponsored for the 3-day workshop by local conservation districts. The cosponsors were the Colorado Association of Soil Conservation Districts (CASCD), Western State College, the Colorado Department of Education, the Soil Conservation Service, and several other Federal and State agencies. The workshop offered 2 hours of graduate credit.

Jerry Schwiens, public affairs specialist, SCS, Denver, Colo.

SCS District Conservationist John Scott of Gunnison, Colo., holds a range clipping ring to show teachers how SCS measures plant cover on rangelands. (Photo by Jerry Schwiens.)



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Conservation Calendar

November	3-4	American Agricultural Law Association Annual Meeting & Educational Conference, San Francisco, Calif.
	9-11	62nd National Future Farmers of America Convention, Kansas City, Mo.
	9-12	National Association of Farm Broadcasters Annual Meeting, Kansas City, Mo.
	10	Nebraska Hall of Agricultural Achievement Award Ceremony, Lincoln, Nebr.
	10-12	American Society of Farm Managers & Rural Appraisers Annual Meeting, Savannah, Ga.
	12-15	1989 International Irrigation Exposition & Technical Conference, Anaheim, Calif.
	12-15	American Bankers Association National Agricultural Bankers Annual Conference, St. Louis, Mo.
	14-18	Natural Resources for the 21st Century Conference, Arlington, Va.
	16-17	National Food and Agricultural Policy Workshop, Washington, D.C.
	28-30	66th Annual USDA Outlook Conference, Washington, D.C.
	29	73rd Annual Meeting & Dairy Summit of the National Milk Producer's Federation, Nashville, Tenn.
December	4	Tuskegee University's George Washington Carver Memorial Lecture, Tuskegee, Ala.
	5-6	USDA Hispanic Employment Program Symposium, Pan American Univ., McAllen, Tx.
	5-7	National Farmers Organization National Convention, San Antonio, Tex.
	5-7	11th Biennial Range Beef Cow Symposium, Rapid City, S. Dak.
	6-8	National Association of Government Communicators Annual Conference, Arlington, Va.
	12	Agricultural Research Service Scientists Meeting/Entomological Society of America National Conference, San Antonio, Tex.
	12-15	American Society of Agricultural Engineers International Winter Meeting, New Orleans, La.
January	7-11	American Farm Bureau Federation 71st Annual Meeting, Orlando, Fla.
	10-13	National Association of Wheat Growers 40th Annual Convention, San Antonio, Tex.
	19-Feb.4	Southwestern Exposition & Livestock Show, Fort Worth, Tex.
	21-23	Idaho Feed & Grain Association Annual Convention, Boise, Idaho
	30-31	Eastern Iowa Conservation Tillage Show, Cedar Rapids, Iowa